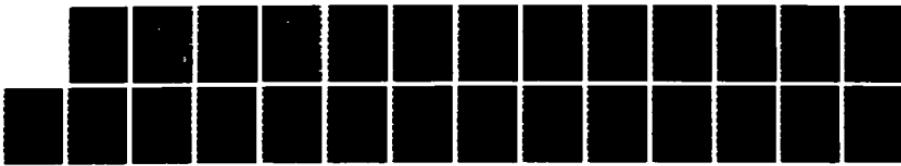


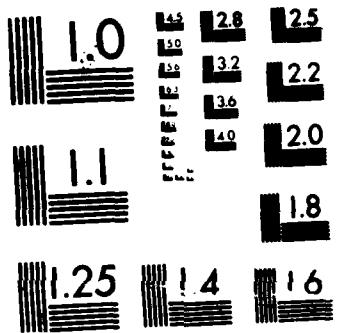
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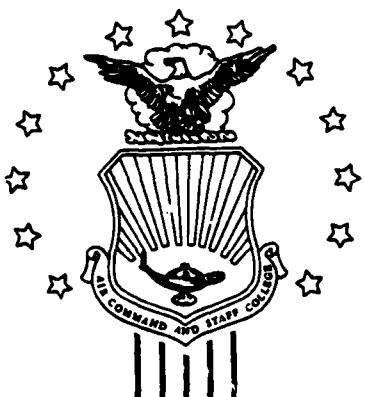


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STUDENT REPORT

ARMS CONTROL - RIPE FOR CHANGE

Major Chris R. Westbrook

87-2705

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Submitted to the faculty in partial fulfillment of
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PREFACE

The arms control process has the potential to serve as an effective peacekeeping tool. The current process, however, is ripe for change. The challenge of the eighties is to determine and implement changes that will allow the process to reach full effectiveness. This article presents three modifications to the process that have the potential to revitalize arms control. The result of this new approach will be meaningful and lasting new treaties essential to maintaining peace.

Many people provided reviews and comments on the ideas presented here. I wish to particularly thank Major Mike White, my advisor, for his critical review of the manuscript.

Subject to clearance, this manuscript will be submitted to Strategic Review for consideration. To meet editorial requirements, the article was prepared double-spaced and with 1½ inch left margins.

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ABOUT THE AUTHOR

Major Westbrook entered the United States Air Force in 1970 and was commissioned through the Officer Training School in 1973. His assignments include duty as an Assistant Professor of Physics at the Air Force Academy and as Senior Instructor for the 308th Strategic Missile Wing at Little Rock AFB, Arkansas. An assignment at Strategic Air Command Headquarters at Offutt AFB, Nebraska provided the opportunity to look into the subject of arms control. Major Westbrook's academic degrees include a Bachelor of Science in Nuclear Engineering from the University of Tennessee, a Master of Arts in Business Administration/Personnel Management from Webster University, and a Master of Science in Nuclear Engineering from the Air Force Institute of Technology. He completed the Squadron Officer School by correspondence and in residence, the Air Command and Staff College by seminar, and the National Security Management Course by correspondence. He is currently a student at Air Command and Staff College. His decorations include the Meritorious Service Medal with one Oak Leaf Cluster and the Air Force Commendation Medal. Major Westbrook is married to the former Carol Ann Murray of Shreveport, Louisiana. The couple has four children.

ARMS CONTROL - RIPE FOR CHANGE

Introduction

Although the idea of arms control as a peacekeeping tool existed for many centuries, the first serious attempt to develop and use the concept came only after several nations integrated nuclear weapons into their arsenals. From the first atomic test in 1945 to the present, countries have discussed, negotiated, and occasionally ratified arms control agreements. However, the expiration of SALT I in 1977 and the state of SALT II and subsequent negotiations clearly show the arms control process is not exact and needs changing. The challenge of the eighties is to determine and implement modifications that will allow the arms control process to reach full effectiveness. This article briefly discusses what is right and wrong with the current process and then presents three modifications that go a long way towards meeting that challenge.

Right and Wrong

"The traditional objectives of East-West arms control have been three: to reduce the likelihood of war by increasing stability; to reduce the damage of war if

war does break out; and to reduce the economic cost of preparing for war" (4:6). By pursuing these objectives formally, the arms control process provides countries with a reason to communicate with each other leading to a reduction in tensions. The success of arms control rests in the self interest of a single government and the mutual interests two or more governments share. Thus, the common feeling among countries that nuclear war is an unacceptable alternative for settling disputes between nations provides the motivation to talk (3:64). Arms control provides a mechanism for exploiting this common feeling and bringing potential adversaries to the bargaining table. Communication about objectives is an important and explicit quality arms control offers the international community, but there are other implicit traits.

The arms control process offers two psychological benefits. First, the mere act of negotiating an agreement forces people to think about finding the means to avoid armed conflict. Energy is spent on peace instead of war. This positive thrust results in the expenditure of many hours of work by a host of policymakers on each side. As each policymaker puts in more and more work, the stake each has in personally completing a successful agreement becomes greater. This impetus for completing a successful agreement is labeled

the "bureaucratic factor" and arms control uses it quite effectively (5:9-10). The second benefit is that a negotiated arms control agreement establishes clear criteria for defining violations. Thus, when an alleged violation occurs, a means exists to evaluate the circumstances and pass judgment. If a violation is determined, then sanctions can be fairly levied. An international group or single country justifies these sanctions based on the terms of the agreement. The violating country does not have grounds to protest these sanctions on the basis of them being unfair or arbitrary. A sanction posed under such clear cut criteria could reverse the circumstances that led to the violation and defuse a dangerous situation peacefully. Thus the arms control process stimulates communication, motivates policymakers towards peaceful solutions, and determines criteria for defining violations. These attributes make arms control a viable means for pursuing peace.

But not all is right with the system. In the past, countries satisfied the three arms control objectives with solutions that were both consistent and inconsistent with the intent of arms control. Arms control has contributed to stability by making the military relationship between East and West more calculable. However, in establishing numerical ceilings some countries felt the need to develop or produce more

weapons (4:7). The 1977 Red Cross talks on incendiary weapons and the United Nations Disarmament Conference in Geneva on chemical weapons and weather modification are consistent with limiting the damage of war (4:7). But some nations view the development of better guidance and command and control systems as a means for accomplishing this same objective. Clearly this is inconsistent with arms control intent. The Anti-Ballistic Missile (ABM) Treaty of 1972 successfully reduced the economic cost of preparing for war. In this treaty both sides agreed to forego developing an extensive ballistic missile defense. The economic saving was substantial. Although the ABM Treaty produced positive results, most do not. Within the context of arms control agreements countries tend to replace large numbers of obsolete systems with smaller numbers of more expensive and sophisticated systems. The introduction of the Union of Soviet Socialist Republics (USSR) Typhoon and the United States (US) Trident class of submarines are perhaps the most current example of this concept (10:22). The numbers, as dictated by the arms control agreement, are reduced. But the intent is not supported and the process is not as effective as it could be. A way around this shortcoming is to implement appropriate changes to the process.

Missions versus Numbers

One such change might be to examine missions instead

of numerical quantities. Most arms control agreements are based strictly on the quantitative measure of various weapons. This method of accounting is simple and reduces arms control negotiations to a numerical game. However, the main shortcoming here is that technological change can seriously subvert the intent of the negotiated numbers. For instance, one country agrees to a limit of ten missile launchers at a time when each launcher carries a single reentry vehicle. Its negotiating partner determines that ten launchers with a single warhead is acceptable and likewise agrees to the same limit. Some time later, a new technology evolves in one of the countries that allows it to deploy three warheads per launcher. Now in the strict sense of the negotiated agreement, that country still has only ten launchers and yet, has tripled its threat. This example clearly demonstrates the obvious effect technological change has on negotiated quantities. But other, more subtle effects pervade a numerical based agreement.

For example, using numbers as a standard in arms control negotiations influences the criteria by which decisions are made. Often the goal of obtaining a particular number overrides any other pertinent consideration. Reductions in various weapon systems are made simply because they can be negotiated. If a negotiator could make larger reductions, he probably

would not since such a concession might weaken his bargaining position in future talks. National security decisions thus become political pawns. Furthermore, by establishing a quantitative weapons limit each participant views this limit as an obligation instead of an option (4:15). Though numbers provide a real objective, they can lead to effects that run contrary to arms control intent. A better way of preserving the intent of arms control is to look at missions instead of numbers. Under this new format countries would not negotiate specific numbers, but seek agreement on the military missions neither side should seek (4:19).

This new approach is implied in current arms control methods. When the US and USSR in 1974 agreed to limit the number of multiple independently targeted reentry vehicles (MIRV), they negotiated to limit a pre-emptive first strike mission. When the North Atlantic Treaty Organization (NATO) attempted to reduce USSR tank forces in Eastern Europe, it implicitly tried to restrict USSR surprise attack capability (4:19). Thus, this new approach actually brings the central issue of past negotiations into clear focus. The gains that result from this shift could overcome problems inherent to quantitatively based agreements and reorient the way countries view arms negotiations.

The mission approach shifts the conventional way of

thinking about arms control away from military input of men, tanks, and missiles to military output of surprise attack, pre-emptive nuclear strike, and so on (4:19). The significance technological advancement has on negotiated agreements is reduced tremendously. In the hypothetical example previously presented, the fact that a MIRV capability became available would have little effect on an arms control agreement that specified constraints on a pre-emptive first strike mission. The significance of creating a MIRV technology is now overshadowed by an agreement eliminating the mission it was designed to supplement. Numerous examples are available, but the general philosophy behind mission based arms control is obvious. Eliminate the output that weapons are designed to accomplish and the effect of these weapons is essentially voided. With the new mission based accounting system defined, the next step is to determine where to implement it.

Several missions are excellent candidates for negotiation with three military capabilities of prime concern: The ability to destroy submarine resources; the ability to destroy land based missiles; and with the advent of the Strategic Defense Initiative (SDI), the ability to destroy satellites (4:19). Future arms control negotiators should attempt to gain an understanding that the above stated missions are not to

be pursued. Although there are specific areas of application and clear advantages for mission based accounting, problems do exist.

A careful analysis of mission based arms control uncovers several areas of concern. Eliminating a particular mission does not eliminate existing or multi-role weapons that support it. The previous example of curtailing the use of Soviet tanks for surprise attack is a case in point. Negotiating away this mission would not eliminate tanks as a weapon, but would only restrict their use. Many weapons are multi-mission and though eliminated from one role could still support other military actions. Technological advancement in a certain weapon could still have an impact on security. Another problem related to missions is the way different countries interpret them. Many of the US concepts such as "crisis stability" or "arms race stability" do not apply to Soviet doctrine and thus their importance is not understood (4:27). There are other issues related to the missions approach, but all support the fact that this new approach also has problems that must be resolved. These problems represent a new challenge to negotiators, but also offer the promise of some new solutions.

Technologies related to warfare will continue to expand and advance in the future. The basic technologies of most concern are materials, sensors, computers,

communications, electronics, and data processing. Several weapon systems will use these technologies to increase precision, mobility, and deceptiveness (9:41-79). In some cases these technologies will generate totally new weapon systems such as the SDI proposed particle beams. With technology so tightly interwoven in the fabric of developed countries, its continued expansion is a surety. The susceptibility of the current arms control concept to this expanding technology base dictates that changes must be sought. Mission based arms control is a good starting point.

Confidence-Building Measures

The international community is full of suspicion regarding the political motives and ambitions of its individual members. These suspicions have resulted from a history that continually records border skirmishes, limited war, and general war as means of impressing the will of one country on another. A major impediment to successfully negotiating arms control agreements is this latent mistrust between nations. The arms control process must remove this impediment if countries are ever to fully reap the benefits this process promises. One means of removing or at least reducing this obstacle is labeled confidence-building measures (CBM).

Suspicion between potential adversaries is currently high. The confrontation between the US and USSR provides

a prime example of low mutual confidence. This ebb in confidence has resulted from the Soviet buildup in all spheres, the US's recent surge in weapon development, and both countries failure to reach an agreement to replace SALT I (6:14). Other confrontations abound and can be related to such geographic areas as Central Europe and the Middle East. The wide spread nature of this suspicion has helped maintain the arms race at its current pace and effectively eliminates any chance for arms control to achieve its goals. Reasons that support this suspicion are varied and include the movements and activities of military forces in non-war conditions; research and development programs that have the appearance of undermining strategic or tactical stability; and production shifts that seem to support a military buildup (6:15). The key words in stating these reasons are "appear" and "seem." Both imply uncertainty. The purpose of CBMs is to reduce the elements of uncertainty and threat inherent in the activity of countries during non-war conditions (5:146). Eliminating uncertainty will foster a better environment for arms control because countries will no longer react with countermeasures aimed at neutralizing unsubstantiated threats.

Confidence-building measures are designed to increase both mutual confidence between nations and the

self-confidence of an individual nation. Mutual confidence involves eliminating uncertainties related to activities within one country that could threaten the security of another country. The main thrust of any CBM aimed at building mutual trust is to establish means by which intentions can be clarified and strategic behavior justified (1:2). Self-confidence is established when a country can detect a threat to its security and react to it in a timely manner. If these confidences existed, countries would offer less resistance to entering agreements that reduce their military strength. This would open the way to producing a downward spiral in the arms race that could lead to an effective arms control agreement. The realization of such an agreement would depend on the mechanisms used to engender these assurances.

Opposing countries can build trust in each other by several means. One way is to announce large planned military exercises. Many countries routinely have large maneuvers to assess the proficiency of their armed forces. All preparations leading to these exercises exactly duplicate those that would occur prior to the commencement of hostile activities against a bordering country. The early announcement of an exercise would put to rest any concerns an adjacent country might have in regard to its security. This open and honest

communication between two countries helps develop a shared trust. Another means of establishing confidence is to allow observers to attend military exercises and periodically visit critical military complexes. These observers could immediately detect any militarily significant changes and communicate them to their country. Other more implicit means also exist to relay the peaceful intent of a country toward its neighbors. Positioning tactical aircraft at distances greater than their tactical range from targets in a bordering country or placing missile warheads and launchers in different locations sends a clear message of non-aggressive activity (2:11). All these examples have the potential for building both mutual confidence and self-confidence. The problem surrounding CBMs is getting countries to agree on what means are necessary.

All nations view defense in a different manner. What is considered necessary for defense by a country is often derived from past history. Since no two countries have the same history, doctrinal asymmetries are bound to exist. These asymmetries lead to totally different perspectives on the same issue and generate impasses during negotiations. Even if two countries had relatively similar doctrines concerning warfare, there could still exist a wide gulf in what each considered a safe position. Thus, a major hurdle for building

confidence between countries is establishing a standard that all countries accept as adequate for maintaining their national security. Negotiations may never reach such a goal, but the very process of exchanging ideas will expose the national psychology of many countries. An understanding of these psychologies is a positive step towards developing an effective arms control policy.

Weapons Testing

Testing plays an important role in both the development and operation of a weapon system. In the development stage, test results verify new concepts, determine means to improve effectiveness, and insure specifications are met. During the operational phase, test results define the effect operational environments have on the weapon. Development and operation thus become the central rallying points for both advocates and opponents of weapons testing. Opponents are firmly committed to the idea that successful arms control can only evolve when the pace of technological advancement is reduced. Therefore, weapons testing must cease because technological advancement is a natural by-product of this process. Advocates feel that eliminating weapons testing would lead to serious security problems related to the reliability of operation of current weapon systems (5:35). Each side has strong justification for its position.

For example, arsenal stability is one of the three objectives for a successful arms control agreement. Technological advancement in weapons design changes the status quo and is thus a destabilizing factor. Because weapons testing plays an important role in advancing the art of weapons design, a comprehensive test ban is viewed as an important step towards effective arms control. Those who support this position cite the fact that testing has continually assisted engineers and scientists in improving weapons effectiveness and flexibility. The introduction of variable yield weapons and permissive action links are examples of such improvements in nuclear weapons design (8:10). The largest destabilizing effect, however, comes from introducing new weapon concepts. Two of the most recent are MIRV launchers and cruise missiles (7:28-30). Both of these innovations owe much of their capabilities to testing and now represent major roadblocks to successfully negotiating arms control agreements. Opponents of weapons testing believe that neither MIRVs nor cruise missiles would have reached an operational capability if testing were prohibited. Though this statement has some validity and encourages those who wish to eliminate testing altogether, there are other aspects that promote continuing weapons tests.

One such aspect is that abolishing weapons testing could produce some asymmetrical effects in the

international community. The basis for this conjecture resides in the contrast between an open and closed society. In a closed society, such as that which exists in the Soviet Union, weapons tests could continue undetected even though a test ban agreement was in effect. The very nature of a closed society means the government could conduct tests without revealing that fact to other nations. Thus, covert actions are easily concealed. Violations would have to be detected by some type of seismic or electromagnetic sensor. Unfortunately, underground testing virtually eliminates any electromagnetic signature and seismic signals are extremely difficult to detect and interpret. Part of the problem in detecting seismic signals is the large amount of natural activity related to the shifting of the earth's crust. This activity generates seismic signals that have the same magnitude as that produced by a nuclear test (5:32). Therefore, the combination of closed society and difficult detection makes test ban verification extremely difficult. In an open society, however, any unusual seismic activity would eventually lead to an investigation where the cause would be determined and reported. So, an unauthorized nuclear test in an open society would have a high probability of being detected and exposed. Because of these facts, testing advocates fear that a negotiated test ban would

lead to one nation gaining technological superiority over another. This fear is substantiated by the reality of existing differences between open and closed societies. This technological imbalance could lead to serious disparities in weapons capabilities and threaten the security of the country abiding by the terms of the agreement. Advocates of weapons testing feel that verification is not reliable enough to assure equal compliance to a negotiated test ban. These advocates also see weapons testing as necessary for assuring reliability of existing weapons.

Nuclear weapon reliability must be periodically tested. Chemically-active materials are used in fabricating these weapons and thus make them susceptible to a variety of aging processes. These aging processes can alter detonation characteristics and even lead to complete malfunctions (5:27). The security implications of malfunction is obvious. An unreliable nuclear arsenal would erode the effects of deterrence and could foster an aggressive attitude in some countries.

The net result of comparing advocates and opponents of weapons testing is that the subject is most controversial. Eliminating tests could enhance the arms control process by reducing the pace of technological advancement. However, if one country covertly violated a test ban treaty, a serious imbalance in international

security could result. Additionally, since nuclear weapons form the fulcrum of today's deterrence, the assurance of their reliability is an important issue. Opponents and advocates of weapons testing present strong arguments for their respective cause, but the correct solution has yet to clearly materialize. Because no one really knows what the correct answer is does not mean that action should not be taken. The very act of suspending testing sends a clear message that serious attempts are underway to find an arms control agreement. The US and USSR should suspend all nuclear weapons testing immediately upon enacting the previous two modifications presented in this article. As to the lasting effect of suspending testing, only time will tell whether a positive or negative result is achieved.

Summary and Conclusions

The arms control concept has the potential to serve as an effective peacekeeping tool. The current process, however, is ripe for change. The challenge of the eighties is to determine and implement modifications that will allow the process to reach full effectiveness. The modifications presented in this article have the potential to revitalize arms control. These modifications have their own associated problems, but hopefully these problems have solutions that are more readily resolvable and acceptable in the international

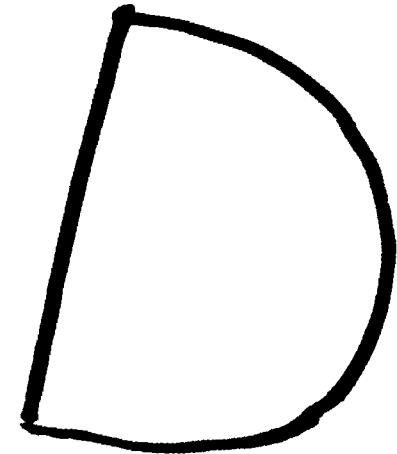
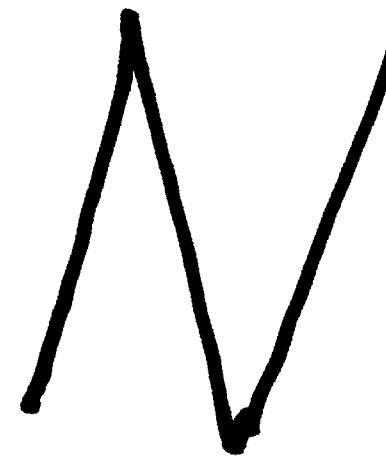
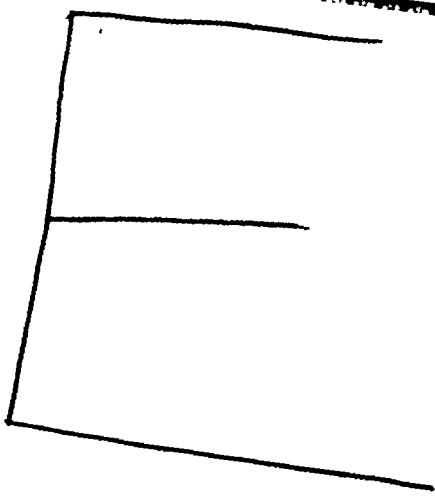
community.

The proposed modifications offer the arms control process some new flexibility. Basing arms control on missions instead of numbers will eliminate dependence on technological advancement. Confidence-building measures will tear down barriers that keep countries from communicating the intent and justification of their military action. The immediate contribution of weapons testing is not clear. However, a future test ban that preserves international security will enhance arms control and provide negotiators with an effective peacekeeping tool.

The international community should attempt to implement these modifications into the arms control process. Such an attempt will focus attention on some new ideas that could lead to greater cooperation and compromise between nations. From cooperation and compromise will come treaties with meaningful and lasting results. The arms control process will have reached full effectiveness. The challenge of the eighties will have been met.

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